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A *Drosophila* Survey in Okinawa Main Island¹⁾

With 2 Text-figures

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(Communicated by S. MAKINO)*

ABSTRACT The present paper reports the results of drosophilid collections in Okinawa Main Island in October, 1965. A total of 20 species was described: they are 4 genera including one new species, *Leucophenga lacteusa* sp. nov.

During a period from the 1st to the 15th of October, 1965, the authors had an opportunity to take a *Drosophila*-collecting trip in Okinawa Main Island. This report is a contribution to the rather meager information on the drosophilid fauna of Okinawa.

Over 800 flies were collected and they represent four genera and twenty species, including one new species and four unrecorded species.

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Genus *Leucophenga* Mik

1. *Leucophenga nigriventris* (Macquart)
Drosophila nigriventris Macquart, 1843. Dipt. exot., 2 (3): 259.
Leucophenga nigriventris Duda, 1924. Arch. Naturgesch. A, 90 (3): 188.
Leucophenga angusta Okada, 1956. Syst. Study Drosophilid, Japan: 28.
Specimens examined: 2 males, Izumi, Oct. 5; 1 male, Yona, Oct. 6, 1965 (Takada).
Distribution: Okinawa, Formosa, Java, Africa, Fiji and Micronesia.

1) Partial financial support for this investigation from a grant by the Japan Society for the Promotion of Science as part of the Japan-U.S. Cooperative Science Program is acknowledged here.

2. *Leucophenga magnipalpis* Dada

Leucophenga magnipalpis Dada, 1924. Arch. Naturgesch. A, **90** (3): 187.

Specimens examined: 1 male, Yona, Oct. 5; 1 male and 3 females, Yona, Oct. 6, 1965 (Takada).

Distribution: Okinawa (new record), Formosa and Japan.

3. *Leucophenga lacteusa* sp. nov. (Fig. 1)

Japanese name: Ginga kogane shojobae.

Male: Body length up to 3.5 mm. Arista about $7/3$; proclinate and anterior reclinate orbitals subequal, three-fourths length of posterior reclinate orbital, and their bases at nearly the same level: ocellars long. Ocellar triangle opalescent around ocellus. Front narrow, pale yellowish white; face whitish yellow. Antennae tan. Cheeks pale, linear; palpi tan or with margin a little darker, slender in shape, with few stout subapical bristles.

Mesonotum tan, covered with dense silvery pruinosity which is evident in cephalic view; pleura pale with a diffuse brown mark on prepisternum and

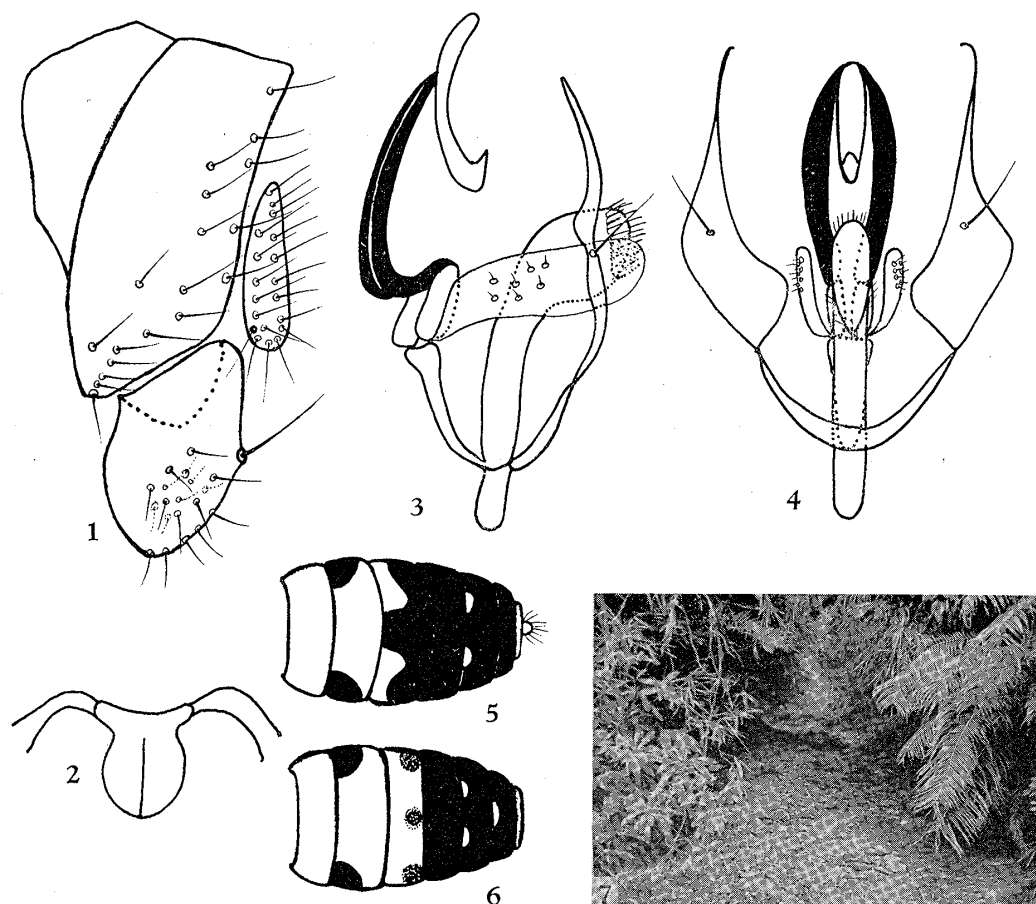


Fig. 1. *Leucophenga lacteusa* Takada and Wakahama, n. sp. 1, external genital apparatus of male. 2, bridge connecting two sides of genital arch. 3, copulatory apparatus of male in lateral view. 4, copulatory apparatus of male in ventral aspect. 5, female abdomen. 6, male abdomen. 7, a mountain-stream side of Fungawa (about 300 m high), Okinawa Main Island, where collection was made.

mesopleura a little silvery; scutellum strongly silvery but broadly yellow at apex and with brown marks on anterior scutellar portion, sometimes with small brown patch on middle apically. Legs pale, knees slightly darkened except on front. Knob of haltere white.

Abdomen yellowish white, silvery, with a black spot on each lateral side of 2nd tergite; 3T with a small lateral mark on each side, and sometimes with small brown patch on middle apically; 4T entirely black; 5T with caudal band projected anteriorly at middle and each lateral side; 6T black except anterior margin; 7T yellowish brown, often not seen because of telescoping of segments (Fig. 1-6).

Wings hyaline, first vein a little darkened; C-index about 3.0; 4V-index about 1.5; 5X-index about 1.1; C3 fringe on basal 3/5. Third costal section with thorn-like warts on under side.

External genital apparatus: Genital arch with 8th tergite well developed, lower end broadly truncate; lower portion with about 10-11; upper portion with about 7 along posterior margin. Anal plate separated, crescent, and with about 20 bristles. Clasper broad; primary teeth absent, upper surface with about 6 bristles, undersurface and margin with about 13 bristles. Bridge connecting arch scallop-shaped.

Copulatory organs: Penis pubescent at tip. Anterior gonapophyses with 7 sensilla at middle. Posterior gonapophyses elongated, apical half orange yellow, basal half bifid and blackish brown. Ventral fragma a narrow arch, to which is connected a large hypandrium. Submedian spine present.

Female: Abdomen yellowish white, silvery, with a black spot on each side of 2T; 3T and 5T with caudal band projected anteriorly at middle and each lateral side; 4T and 6T entirely black (Fig. 1-5).

Holotype: Male, Fungawa, Oct. 7, 1965 (Takada).

Allotype: Female, collected together with the holotype, deposited together with the holotype at Kushiro Women's Junior College.

Paratype: 10 males and 8 females, collected together with the holotype, deposited at Kushiro Women's Junior College.

Distribution: The northern mountain area of Okinawa Main Island (Fig. 1-7).

Relationships: Closely resembles *Leucophenga maculata* Dufour, 1839, from Formosa, in having 3 blackish spots on 3-5 tergites of both sexes, but differs from the latter in having entirely black band on 4T of both sexes and 3T almost silvery pruinosity in male.

4. *Leucophenga* sp. *a*

Leucophenga sp. Okada 1965. Kontyu, **33** (3): 328.

Specimen examined: 1 female, Izumi, Oct. 5, 1965 (Takada).

Genus *Microdrosophila* Malloch

5. *Microdrosophila pleurolineata* Wheeler and Takada

Microdrosophila pleurolineata Wheeler and Takada, 1964. Ins. Micronesia, **14** (6): 215.

Specimens examined: 3 males, Yona, Oct. 6, 1965 (Takada).
 Distribution: Okinawa, Caroline Is., and S. Mariana Is.

Genus *Mycodrosophila* Oldenberg

6. *Mycodrosophila subgratiosa* Okada
Mycodrosophila subgratiosa Okada, 1965. Kontyu, **33**: 339.
 Specimens examined: 1 male and 1 female, Yona, Oct. 6, 1965 (Takada).
 Distribution: Okinawa.
7. *Mycodrosophila takachihonis* Okada
Mycodrosophila takachihonis Okada, 1956. Syst. Study Drosophilid, Japan: 47.
 Specimen examined: 1 female, Yona, Oct. 6, 1965 (Takada).
 Distribution: Okinawa (new record), Kyushu, Honshu and Hokkaido.
8. *Mycodrosophila wassermani* Wheeler and Takada
Mycodrosophila wassermani Wheeler and Takada, 1964. Ins. Micronesia, **14** (6): 204.
 Specimen examined: 1 female, Yona, Oct. 6, 1965 (Takada).
 Distribution: Okinawa (new record), Caroline Is.

Genus *Drosophila* Fallén
 Subgenus *Sophophora* Sturtevant

9. *Drosophila bipectinata* Duda
Drosophila bipectinata Duda, 1923. Ann. Mus. Nat. Hung., **20**: 52.
 Specimens examined: 3 males, Izumi, Oct. 5, 1965 (Takada and Wakahama).
10. *Drosophila takahashii* Sturtevant
Drosophila takahashii Sturtevant, 1927. Philip. J. Sci., **32**: 371.
 Specimens examined: 15 males and 5 females, Izumi, Oct. 5, 1965 (Takada and Wakahama).
11. *Drosophila ficusphila* Kikkawa and Peng
Drosophila ficusphila Kikkawa and Peng, 1938. Japan. J. Zool., **7**: 531.
 Specimens examined: 2 males, Izumi, Oct. 5, 1965 (Wakahama and Takada).
12. *Drosophila kikkawai* Burla
Drosophila kikkawai Burla, 1954. Rev. Brasil. Biol., **14**: 47.
 Specimen examined: 1 male, Izumi, Oct. 5, 1965 (Takada).
13. *Drosophila lacteicornis* Okada
Drosophila lacteicornis Okada, 1965. Kontyu, **33**: 347.
 Specimens examined: 5 males and 1 female, Izumi, Oct. 5, 1965 (Takada and Wakahama).
 Relationships: Differs slightly from the original description of *D. lacteicornis* Okada, in pubescent penis (non-pubescent in the description); median notch of ventral fragma deep and lower half of anal plate with four large black stout ventrally curved bristles in male specimens. Genital apparatus of male was intermediate in shape between *D. asahinai* Okada, 1964, and *D. lacteicornis* Okada, 1965.

Subgenus *Drosophila* Fallén

14. *Drosophila nasuta* Lamb
Drosophila nasuta Lamb, 1914. Trans. Linn. Soc., 16: 346.
Specimens examined: Many, Izumi, Oct. 5, Oct. 6; Yona, Oct. 6; Ada, Oct. 7, 1965 (Takada and Wakahama).
15. *Drosophila bizonata* Kikkawa and Peng
Drosophila bizonata Kikkawa and Peng, 1938. Japan. J. Zool., 7: 532.
Specimens examined: 2 males, Izumi, Oct. 6, 1965 (Takada).
16. *Drosophila immigrans* Sturtevant
Drosophila immigrans Sturtevant, 1921. Carnegie Inst. Washington Pub., 301: 83.
Specimens examined: 2 males, Izumi, Oct. 6, 1965 (Takada and Wakahama).
17. *Drosophila* sp. *a* (Fig. 2)

Male: Body dark brown, about 2.5 mm in length. Head brown. Antennae brown. Arista 4/2. Periorbits dark brown. Front dark brown, with numerous frontal hairs. Anterior reclinate orbital about 1/2 or proclinate orbital and 1/3 or posterior reclinate orbital.

Mesonotum dark brown with two blackish brown stripes at inside dorsocentral lines, acrostichal hairs in 6 rows; scutellum blackish brown, anterior scutellars convergent. Humerals 2, upper longer. Thoracic pleura dark brown, concolorous. Halteres grey. Legs brown. Abdominal tergites entirely blackish brown.

Wings fuscous, veins brown: C-index about 4.0; 4V-index about 1.3; 4C-index about 0.6; 5X-index about 1.0. C3-bristles on basal 1/3. C1-bristles 2.

External genital apparatus of male: Genital arch with about 5 bristles on upper portion; heel present; toe low, pointed downwards, not covering the clasper, with about 10 spines. Anal plate kidney-shaped, fused with arch, with dense bristles. Clasper one, extending below the toe; primary teeth about 9, arranged in a concave row.

Specimen examined: 1 male, Ada, Oct. 7, 1956 (Takada).

Relationships: Probably belongs to the robusta group of the subgenus *Drosophila*.

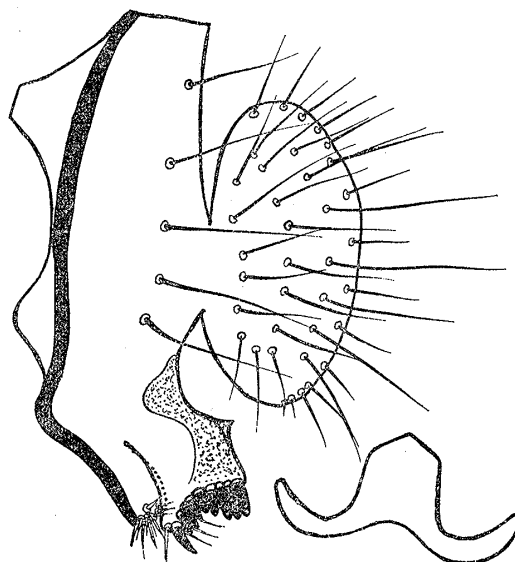


Fig. 2. *Drosophila* (*Drosophila*) species *a*, showing external genital apparatus of male and bridge connecting claspers.

Subgenus *Scaptodrosophila* Duda

18. *Drosophila bryani* Malloch
Drosophila bryani Malloch, 1934. Insect of Samoa, **6** (8): 310.
Specimens examined: 3 males (including 2 blackish specimens), Yona, Oct. 6, 1965 (Takada).
19. *Drosophila dorsocentralis* Okada
Drosophila dorsocentralis Okada, 1965. Kontyu, **33**: 342.
Specimens examined: 3 males and 2 females, Yona, Oct. 6, 1965 (Takada).
20. *Drosophila* sp. *b*.
Drosophila (*Scaptodrosophila*) sp. Okada, 1965. Kontyu, **33**: 341.
Male and female: Anterior reclinate orbital as long as proclinate orbital, which is 1/3 of posterior reclinate orbital.
Specimens examined: 1 male and 2 females, Izumi, Oct. 6, 1965 (Takada and Wakahama).